



# Space News Roundup

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No. 5

## Discovery, international crew to deploy Wake Shield

The possibility of chill winds appeared to be the only remaining hurdle for *Discovery*, which was scheduled to launch Thursday morning with an international crew, a satellite to test a new semiconductor-making process and a commercially developed research lab.

STS-60, the 60th flight of the shuttle program, was set to lift off from Launch Pad 39A at 6:10 a.m. CST Thursday.

Commander Charlie Bolden, Pilot Ken Reightler and Mission Specialists Jan Davis, Ron Sega, Franklin Chang-Diaz and Sergei Krikalev, the first Russian to fly aboard a shuttle, arrived in Florida on Monday.

The primary weather concerns were about the possibility of temperatures in the mid-40s. The temperature, humidity and winds at the pad on launch morning can affect shuttle

systems and their combined effects are figured into the launch criteria.

On the first flight day, the crew was scheduled to activate the Spacehab commercial middeck module and set up two middeck experiments, the Capillary Pumped Loop heat-transfer experiment and the Commercial Generic Bioprocessing Apparatus.

The second flight day is dedicated to metabolic and vestibular investigations, part of a set of joint U.S./Russian medical investigations, and checkout of *Discovery's* robot arm.

The third flight day will feature the robot arm deployment of the Wake Shield Facility,

built and managed by the Space Vacuum Epitaxy Center at the University of Houston.

Scientists hope to develop an ultravacuum in the wake of the 12-foot-diameter free-flyer as it orbits 40 nautical miles behind *Discovery*. A process called epitaxial thin film growth will be used to grow an extremely pure, thin semiconductor film of gallium arsenide, which has the potential to provide significantly higher performance than the silicon-based semiconductors commonly used today. The commercial applications for such films

are in the areas of digital cellular telephones, high-speed transistors and computer processors, high-definition television and fiber-optic

communications.

The fourth flight day will feature Shuttle Amateur Radio Experiment operations, Spacehab investigations and vestibular investigations.

After rendezvousing with WSF-1 again on the fifth flight day, Bolden and Reightler will fire *Discovery's* thrusters numerous times to better characterize how plumes from those thrusters affect payloads, with sensitive instruments on WSF-1 taking the measurements.

The crew will grapple WSF-1 with the robot arm and return it to the payload bay on the sixth flight day and conduct more Spacehab and medical experiments. On the seventh, the crew will deploy Orbital Debris

Please see **DISCOVERY**, Page 4



## NASA buy-out awaits broader measure's fate

The NASA buy-out bill appears stalled until Congress finishes hearings on a governmentwide bill, JSC Human Resources officials report.

"The administration has indicated that they'd like to win approval for a governmentwide buy-out," said Human Resources Director Harvey Hartman. "If that fails, the agency will continue to push for our individual bill. Either way, once approved, we have a plan in place to offer the buy-out very quickly to our employees."

NASA Headquarters' congressional liaisons had hoped that the NASA bill would be passed quickly by unanimous consent once the House and Senate reconvened following the holidays.

The NASA bill was passed by the House in August, and by the Senate the day before Congress left for the holidays. But there is a one-sentence difference between the two versions that must be reconciled.

NASA Administrator Daniel S. Goldin testified this week at hearings on the governmentwide bill. It is hoped that the NASA bill or the broader bill will be passed by March.



JSC Photo by Jack Jacob

**SEE-THROUGH TECHNOLOGY**—Participants at this week's Dual-Use Space Technology Transfer Conference check out an Allus Technology see-through flat-screen computer display. From left are NASA Associate Administrator for Advanced Concepts and Technology Greg Reck, conference co-chair Kumar Krishen, Chris Ortiz of JSC's Software Technology Branch, and David Tinker of Allus Technology.

## New director begins JSC realignment

Assignments for several key staff members and the elimination of three offices were announced Tuesday by JSC Director Dr. Carolyn L. Huntoon.

"These changes are the first of many that will help us align the center's organizations to more effectively support the challenges we face in the 1990s," Huntoon said. "Since JSC was named the host center for the Space Station Program, we have been working to find new efficiencies and better ways to support such a large undertaking. These changes will help us get where we want to go."

The organizational changes include abolishment of the New Initiatives Office and the closeout of the Space Station *Freedom* Projects Office. Huntoon also announced that the functions of the Joint U.S./Russian Federation Programs Office will be absorbed by the new program office.

"In order to more effectively focus our efforts on our principal program responsibilities, we will begin immediately the process of realigning the functions and personnel of the New Initiatives Office," Huntoon said.

With staffing of the new Space Station Program Office well under way and most employees of the old *Freedom* Projects Office reassigned elsewhere, that office is now officially closed, Huntoon announced.

Huntoon also announced several key personnel assignments. Joseph P. Loftus, formerly associate director for plans, will join the Space and Life Sciences Directorate where he will help manage efforts to understand and minimize problems associated with orbital debris. JSC is one of the world's leading organizations in analyzing this emerging spacefaring concern.

Clarke C. Covington, formerly special assistant to the director, will move to the Center Operations Directorate, where he will conduct a bottom-up review of all center facilities in support of the shuttle and station programs. "Clarke will make recommendations for any immediate changes which will allow us to more effectively support those programs," Huntoon said.

Nancy G. Robertson, formerly assistant to the director for education, will move to the Public Affairs Office to lead a newly formed Education Branch.

Please see **HUNTOON**, Page 4

## Space station contracts combine into one

By Kari Fluegel

NASA passed a major Space Station Program milestone Tuesday when agency and contractor officials signed documents marking the end of the *Freedom* work package contracts and concentrating design, development and integration under a single prime contract with Boeing Defense and Space Systems Group.

"This event is just one indicator that work on the international space station is on track and moving ahead," said Randy Brinkley, manager of the Space Station Program Office. "A large group of people has been working very hard over the last

several months to make the transition from the *Freedom* program to our current redesigned program. Because of their efforts, we are well on our way to having an international laboratory in space."

One of the documents signed Tuesday is a major modification to the letter contract between NASA and Boeing, signed on Nov. 15, 1993. The modification changes Boeing's scope of work from a transitional contract to a hardware design and development contract. A final contract between NASA and Boeing will be finalized later this year.

Boeing was designated as the prime

contractor in August 1993 following a recommendation by the Station Redesign Team to strengthen station integration by realigning the separate hardware development contracts under a single prime contractor. As the prime contractor, Boeing will be responsible for the design, development, physical and analytical integration, and test and delivery of space station. After contract realignment, Boeing will be responsible for the management of two major subcontracts with McDonnell Douglas and Rocketdyne.

"This contract is a major milestone for

Please see **CONTRACT**, Page 4

## New JSC history book ready for publication

JSC has been at the heart of America's human space program for more than 30 years, and now a new book that chronicles its place in history is ready for publication.

In the coming months, each JSC branch will receive a reference copy of *Suddenly, Tomorrow Came... A History of the Johnson Space Center*, written by Henry C. Dethloff. Space News Roundup today begins a series of four excerpts from the text, and plans for sales of the book are being completed.

"The story of manned spaceflight is the story of many diverse individuals, and of the collaboration of persons of many backgrounds and persuasions in what became a peacetime mobilization of American human and capital resources. It is a history of science, of engineering, of sacrifice, failures, and great achievement," wrote Dethloff in his preface. "Johnson Space Center and its personnel are central to the story of the National Aeronautics and Space Administration and manned spaceflight and to

the inception of a new epoch in human history."

The book was written with the help and advice of the JSC History Office and the JSC History Advisory Committee, and published through NASA Headquarters' Scientific and Technical Information Division as part of the NASA History Series. All of the typesetting and graphics, including the cover, were designed and produced by JSC's Management Services Division.

In a forward completed shortly

before his death, astronaut Deke Slayton wrote that: "This history ... is a detailed chronicle of the U.S. space program with emphasis on humans in space and on the ground. It realistically balances the role of the highly visible astronaut with the mammoth supporting team who provide the nuts, bolts and gas to keep the train on the track. It recognizes the early political and technical geniuses who had the vision and ability to create NASA and JSC and keep them expanding...."



*SUDDENLY, TOMORROW CAME...*

A History of the Johnson Space Center

JSC

# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

**Houston Rodeo** — A limited number of tickets are available for selected performances. Cost is \$9 per ticket.

**Sesame Street** — Sesame Street Live will be presented at 10:30 a.m. Feb. 12 at the Summit. Cost is \$8 per ticket.

**Moody Gardens** — Discount tickets for two of three different attractions: \$9 Entertainment '94 Coupon Books — Bay Area/Galveston/Downtown or FM 1960/Downtown: \$30 each, \$1 off first book for civil servants. Gold C Books: \$8 Space Center Houston — Discount tickets: adult, \$7.50; child (3-11), \$4.50; commemorative, \$9.95.

**Metro tickets** — Passes, books and single tickets available.

**Movie discounts** — General Cinema, \$4.50; AMC Theater, \$3.75; Loew's Theater, \$4.

**Stamps:** Book of 20, \$5.80

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# Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday-Friday; 9-11 a.m., 1-3 p.m. and 6:30-9 p.m. Wednesdays; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

**Weight safety** — Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Feb. 8. Pre-registration is required. Cost is \$5.

**Defensive driving** — Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is Feb. 5. Cost is \$19.

**Aerobics** — High/low-impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Exercise** — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

**Aikido** — Martial arts class meets from 5-7:30 p.m. Tuesdays and 6:15-8:15 p.m. Wednesdays. Black Belt class from 6-8 p.m. Fridays, requires instructor permission. Cost is \$25 per month.

**Stamp club** — JSC Stamp Club will meet from 7-9 p.m. every other Monday. For more information, call Dianne Kerkhove at 554-2764

**Fitness program** — Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Weir at x30301.

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# Dates & Data

## Today

**Cafeteria menu** — Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks

## Saturday

**NSS meets** — The National Space Society Southwest Regional Conference begins at 9 a.m. Feb. 5 at the Ramada Kings Inn on NASA Road 1. Astronaut Story Musgrave is the featured speaker. For additional information, contact Rich Kolker at 286-6070.

**PSI seminar** — The Clear Lake/NASA Area chapter of Professional Secretaries International will host a seminar from 8 a.m.-2 p.m. Feb. 5 at San Jacinto College South Campus on "Developing Positive Working Relationships." For information contact Elaine Kemp, x30556, or Diana Peterson, x30390.

## Monday

**Cafeteria menu** — Special: Italian outlet. Total Health: herb flavored steamed pollock. Entrees: barbecue beef, spare ribs with kraut, steamed pollock, French dip sandwich. Soup: black bean and rice. Vegetables: California mix, okra and tomatoes, vegetable sticks, ranch style beans.

## Tuesday

**Parenting series** — A lunchtime brown bag video on understanding

infant development will be shown at 11:30 Feb. 8 in Bldg. 45, Rm. 551. For additional information, call x34734.

**Cafeteria menu** — Special: corned beef hash. Total Health: baked potato. Entrees: meatballs and spaghetti, grilled liver and onions, beef cannelloni, ham steak Hawaiian. Soup: split pea. Vegetables: winter blend mix, seasoned cabbage, breaded squash, lima beans.

## Wednesday

**Black history luncheon** — JSC's Black Employment Council will host a 1994 National Black History Month luncheon at 11 a.m. Feb. 9 in the Gilruth Center ballroom. Sheila Jackson Lee, at-large council member for the City of Houston, will speak. Deadline to purchase tickets is 5 p.m. Feb. 4. Cost is \$8.50; call x34831.

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Feb. 9 in Bldg. 31, Rm. 129. For more information, call Al Jackson, 333-7679.

**PSI meets** — The Clear Lake/NASA Area chapter of Professional Secretaries International meets at 5:30 p.m. Feb. 9 at the Holiday Inn on NASA Road 1. For additional information, contact Elaine Kemp, x30556, or Diana Peterson, x30390.

**Toastmasters meets** — SpaceLand Toastmasters Club meets Feb. 9 at 7 a.m. at the House of Prayer Lutheran Church. For additional information, contact Dale Denais at x30432 or Steve Shields at x31941.

**Cafeteria menu** — Special:

smoked barbecue link. Total Health: roast pork loin. Entrees: cheese enchiladas, roast pork and dressing, baked scrod, baked chicken, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, Spanish rice, turnip greens, peas and carrots.

## Thursday

**Russian speakers** — Practice Russian language skills from 11 a.m.-1 p.m. Feb. 10 in the Bldg. 3 cafeteria. For more information, call Jack Bacon, x38725, or Amy Mendez, x38066.

**Cafeteria menu** — Special: chicken fried steak. Total Health: roast beef with gravy. Entrees: roast beef with dressing, steamed pollock, lasagna with meat, baked chicken, French dip sandwich. Soup: beef and barley. Vegetables: whole green beans, butter squash, cut corn, black-eyed peas.

## Friday

**JAS meets** — The JSC Astronomical Society meets at 7:30 p.m. Feb. 11 at the Center for Advanced Space Studies on Bay Area Blvd. and Middlebrook. Phil Kopitske will discuss "The Millennial Project: Colonizing the Galaxy in Eight Easy Steps." For additional information, contact David Portree at 554-2617.

**Cafeteria menu** — Special: fried chicken. Total Health: vegetable lasagna. Entrees: broiled cod fish, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

# Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

## Property:

Rent: Galveston condo, furn, sleeps 6, Seawall Blvd and 61st St, dly/wknd/wkly, Magdi Yassa, 333-4760 or 486-0788.

Sale: Taylorcrest, 4-3-2.5, 3200 + sq ft, pool/spa, island kit, \$290k, 4% co-op, Richard x30271 or 326-4963.

Rent: Winter Park, CO, furn, 2-2, sleeps 6. 488-4453.

Rent: Condo Basalt, CO, 3-3.5, \$130/dly/\$800 wkly, 505-527-2480.

Sale: April Sound timeshare Memorial Day wk, plus 1 unsched wkyr, \$5k. John, 235-2342.

Sale: Lake Livingston, Point Blank, 3-2, lg wooded lot. John, 235-2342.

Sale: Chambers County, 25' x 210' lots, util, Barbers Hill ISD, financing. 488-5058.

Rent: Arkansas cottage, Blue Mt Lake, furn, 4 ac, \$250/wkly, \$50/dly. x33005 or 334-7531.

Rent: Wolf Creek, CO, 2 BDR, furn, sleeps 6, no smoking/no pets, dly/wkly/mo. Bob, x30825 or 998-7372.

Sale: Friendswood/Heritage Park, 3-2-2, 1850 sq ft, jacuzzi, both formals, FPL, ceiling fans, fenced, \$89.9k. 996-5076.

Sale/Lease: Egret Bay Villa condo, 1-1-2 CP, W/D, FPL, security gate, patio, \$450/mo. 335-1451.

Lease: Sagemont, 3-2-2, w/formals, stove, avail 2/2/94, \$725/mo. x39120 or 480-9468.

Lease/Sale: CLC, Baywind II condo, 1BDR, FPL, appli, W/D conn, no pets, \$385/mo. 488-5019.

Lease/Sale: Egret Bay condo, 2-2, W/D conn, \$610/mo + dep/\$45k. 643-3406.

Lease: Baywind II condo, 1yr lease, 2-2, w/appl, W/D. 488-9080 or 486-0253.

Sale: Hill County property, 26.87 acres, near Austin/Dripping Springs, \$5k. Robert, x32587 or 332-1734.

Sale: Brittainy Bay, LC, 3-2-2, lg kit, garden bath, \$86.5k. David, 554-5514.

Sale: Hilltop Lakes Resort, 80' x 120' lot, \$5k OBO. Charlie, 554-6201.

Sale/Lease: Nassau Bay, 4-2-2, gas heat, fenced, \$795/mo/\$114.5k. Do, 333-6806 or 484-2456.

Lease/Sale: Clear Lake, 3-2.5-2, 2 ac, 2400 sq ft, \$1350/mo. 286-4721.

Sale: Oak Brook West, 4-2.5, 2 story, FPL, new appl, \$125k. Gay, x35019 or 488-2756.

Rent: Galveston beach house,

dly/wkly, CA/H, furn. Ed Shumilak, x37686 or 326-4795.

Sale: Galveston beach house, 3-2, CA/H, furn. Ed, x37686 or 326-4795.

Sale: Lometa, TX, 894 ac ranch, 2 houses, 2.5 mi on FM 3415, \$525/ac. 488-5058.

Sale: El Dorado Trace condo, 1-1.5-CP, appl, FPL, assum. 488-3383 or 764-0185.

Rent: Tranquility Lake condo, 1-1-1-CP, W/D, micro, FPL. Vic, x30189 or 333-2482.

Lease: 15107 WoodHorn Dr, 4-2.5-2, island kit, FPL, deck, \$1250/mo. 480-9195.

Sale/Rent: Condo, 2-2, W/D, FPL, upstairs unit. 532-4628.

Lease: Townhome, 1-1.5, loft, W/D conn, \$495/mo + dep. 474-9262.

## Cars & Trucks

'84 Nissan 300ZX, 5 spd, silver w/T-tops, 87k mi, \$4.2k. x39045 or 488-2676.

'80 Olds Cutlass Supreme, wht, 4 dr, AC, PS/PB, auto, 129k, \$1.1k. Riley, x37752 or 280-9424.

'91 Honda Civic 4D LX Sedan, auto, AC, PW/PDR. Jessie, 479-4463.

'81 Dodge Colt/Plymouth Champ, wrecked, one w/partial eng. Herman, x35095 or 409-389-2461.

'85 Tempo, 83k mi, A/C needs work, \$1150. Gene, x33628 or 534-6662.

'84 Toyota PU, 4 spd, A/C, AM/FM, ex cond. 332-2319.

'67 California Special Mustang (GT/CS), gold w/brn stripes, 289, 4651 auto, AC, ex cond, \$7.5k. Jim, 338-2332 or 483-9712.

'80 Chevy Custom Deluxe SWB PU, 350, auto, AM/FM/cass, dual sun roofs, 140k mi, \$2495. Jim, 483-9712 or 338-2332.

'66 Mustang, red w/blk pony int, 6 cyl, auto, A/C, \$3.2k OBO. Eddie Pompa, x38813 or 489-7778.

'84 Nissan Stanza, 4 dr, 5 spd, AC, AM/FM/ cass, 127k mi, \$2.2k. Kelly, 474-2577.

'77 Mercury Bobcat, auto, PS/PB, \$400 OBO. Sharon, x36534 or 486-7428.

'67 Pontiac Firebird Classic, 326 auto, \$2k OBO. Sharon, x36534 or 486-7428.

'90 Acura Integra LS, 5 spd, ex cond, 58k mi, A/C, \$9.5k. Bobby, 538-1835.

'87 Sedan DeVille, ex cond, AC, loaded, \$5.5k OBO. x38785 or 409-945-8787.

'84 Buick LE 6000, loaded, \$1.6k. Travis, 280-2624 or 489-4766.

'85 Chevy Silverado PU, short bed, 47k mi, AT/PS/PB, AM/FM, AC, \$6.5k. Bob, x37246 or 326-1510.

'87 Nissan Pulsar, ex cond, \$3.5k. 333-6277 or 339-3562.

'85 Cutlass Supreme Brougham, 2 dr, PS/ PB, cruise, AM/FM/cass, \$3.2k. X39026 or 326-2895.

'88 Hyundai GLS, ex cond, auto, 56k mi, \$2.3k OBO. x33765 or 326-1390.

## Boats & Planes

U.S. Yachts 22' sloop w/4.5 hp eng, 2 sails, galley, sleeps 5, ex cond, \$5k. Russ x45979 or 332-1769.

18' VIP Vison, 130hp/OMC/I/O, trailer, all access, ex cond, \$9.9k. Jennifer, x38668 or 286-0507.

Chrysler 22' sailboat, sleeps 6, w/galley & head, 5 hp O/B, mainsail & 2 jibs, slip in CL, \$2.8k. 282-1727.

'83 Bayliner, 19' walk-thru window, I/O 125 hp, ex cond, \$3.8k OBO, Gary, x38674 or 996-0099.

'85 Invader boat 19', 4.3 liter Merc I/O, AM/ FM/cass, depth finder, w/trailer. Gay, x35019 or 488-2756.

'87 Marlin Empress, 22', 260 hp, Merc I/O, Cuddy w/ AM/FM/cass, \$11k. Phil, 212-1339 or 337-6614.

22' Catilina sailboat w/trailer, main sail, two jibs, TV, AM/FM, ship to shore radio, auto pilot, \$4.5 OBO. Steve, x38144 or 713-554-4095.

## Cycles

'85 Suzuki GS 300L Street bike, 2.8k mi, ex cond, \$1.4k; '83 Honda XL 600 R, 5.1k mi, ex cond, \$1.8k. Hugh, x31714 or 554-5412.

Schwinn World Sport, 12 spd road bike, \$149. Peter or Cecilia, 526-1853.

## Audiovisual & Computers

Compaq Contura 4/25 laptop & case, 4/120 mb, 32 bit, 25 MHz, inter fax, modem, 3.5 HDD, \$1750. 333-7064.

Uniden RD9XL X & K band radar detector, OBO. Jim, 244-5068.

80 MB FH MFM 28ms HD w/controller (2 HD 2 FD) dbl spaced w/Dos 6.0 & 60 MB software, \$100 OBO. x34701 or 280-8788.

Pioneer SX-626 stereo recvr w/two AR-8 spkrs, \$40. x38373 or 332-5436.

PC software, Quicken 2.0 for Windows, \$10; CD ROM software, RO material, \$10; WIN CD Professional, \$15. Mark, x30044.

IBM PC w/ 640KB RM, 65 MB HD, two 5.25 FD, 13" color monitor, mouse, kybd, \$300. 280-0502.

Rockford Fosgate Power 650 Mosfet-650 watt 4 channel amp, 12 volt oper, \$500. 212-1339 or 337-6614.

## Lost & Found

Lost tie clasp, gold color, alligator clip. Earl Rubenstein, 480-1998.

## Photographic

Pentax Spotmatic 35mm SLR camera sys w/preset lenses, 50mm f1.4, 135mm f2.5, 35mm f3.5, macro 2:1 50mm f4.0, 2 x ext, filters, ex cond, \$275. John, 483-6195.

## Pets & Livestock

Whippet, male, AKC, brindle, 1 yr old, all shots, neut, \$300. Doug, x48851 or 486-7412.

Want AKC reg. 6 wk old German

Shepherd or if expecting would like to see parents. x36174 or 713-592-6328.

## Household

Italian Provincial DR, rectang table extends, one capt, 5 side chrs, china cab, \$900 OBO. 474-3265.

Couch 7 ft, earth tones, non-smoker, \$140. Tom, 996-5835.

Lady Kenmore gas dryer, \$30. X38373 OR 332-5436.

Waterbed, qz, solid wood w/bookcase hdbd, dk finish, \$75. Shane, 244-1022 or 992-1162.

Antique 42" round oak tbl w/claw legs, \$50; two antique matching pressed-back chrs w/ woven cane seats, pr \$150. 333-3672.

Contemporary wht washed oak tbl & chrs, it mauve cushs, new \$1k, sell \$450. Dorothy, 482-1505.

King sz bed w/hdbd & drwrs, \$200; non-working elect dryer, \$5; non-working upright vacuum cleaner, \$1. Keith, x38952 or 486-6765.

Sears bunk beds w/matt, \$50. 480-7864.

Top mount refig/freezer, approx 20 cu ft, \$180 OBO. Lynn, x35974 or Karen, x37389.

## Wanted

Want riders for Van Pool, West Loop park and ride to NASA/contractors. Richard, x37557.

Want non-smoker to share ride from Sugar Land, to JSC wk hrs 7:30 am to 4:00 pm, x41150.

Want 6' x 16' lowboy trailer; Igloo dog house med. Herman, x35095 or 409-389-2461.

Want Capezio dance shoes, leather soles, low to med heel, ladies sz 8.5-9, med width/ & ladies western boots. Amanda, 480-1225 or 486-9605.

Want childcare, reasonable, 3 girls, 4 yrs, 5 yrs, 6 yrs, CL area, 6:45 am - 4:30 pm, M-F. X38817 or 409-935-3892.

Want female roommate to share 3 BR house in the Landing, LC, \$300/mo + half util. Cathy, x41267 or 554-4579.

Want sm tractor 18 - 25 hp, mower, and antique bathtub. x38843 or 409-925-5011.

Want greenhouses, will disassemble and remove from property. Rob or Linda, 339-1385.

Want short term co-op student to share 4 BR home, avail 3/1/94, bills pd, \$275. Deanna, x37389.

Want male or female room mate to share 4-2-2, avail 3/1/94, \$350/mo + 1/2 util. Deanna, x37389.

Want Carpool riders from 1960 and 290 to NASA, 7:30 am - 4:00 or 8:00 am - 4:30, flexible. Cindy, x39468.

## Miscellaneous

Pres & First Lady Gold membership, \$900; ladies ski boots sz 8, Salomon SX-81, \$100. x35753 or 337-2002.

Raichle 860 men's ski boots, sz 9 1/2, \$60; ski jacket, sz XL, \$30; gloves sz M, \$10. Jeri, 333-7552.

Grace baby stroller, \$35; Singer sewing mach w/o cabinet, \$35; bronze decorative egle w/chain for hanging. 480-3424.

Ladies sz 12 winter coats, full length leather, \$45; mid-length lavender coat, \$30 OBO. 474-9262.

Vertical blinds, Wards 3.5" fabric w/vai, 78" x 84", hardware includ, \$60 ea. Ed, 481-4889.

Day Runner daily planner, briefcase style, burgundy, ex cond, \$35. 996-6062.

Two Pres & First Ladies Gold memberships, \$1.2k for both or \$650 ea. Greg, x47209 or 485-6929.

Golf clubs, Tour Model III, 1-SW, \$15.95/ club and metal woods, 1,3, or 5, wood \$35/ per club. David, 554-5514.

Five formal dresses, szs 7-10, some have matching shoes. Trish, 992-1907.

American racing type 34, 5 spike polished alum rims, 15" x 7", 5 lug x 4.5", \$300 for all. 771-0955.

Colt govt .45ACP, blue

# Suddenly, Tomorrow Came...

## Chapter 2: The Commitment to Space

[Editor's note: This is the first of four excerpts from the official history of the Johnson Space Center, the newest addition to the NASA History Series. The book, produced in-house at JSC, will be available in March.]

By Henry C. Dethloff

"I can recall watching the sunlight reflect off of Sputnik as it passed over my home on the Chesapeake Bay in Virginia," Dr. Robert R. Gilruth recalled to the audience at the Sixth International History of Astronautics Symposium meeting in Vienna, Austria, in 1972. "It put a new sense of value and urgency on the things we had been doing. When one month later the dog, Laika, was placed in orbit in Sputnik II, I was sure that the Russians were planning for man-in-space." The American response grew from an unusual concatenation of events—a Russian satellite and a dog in orbit, a NACA Pilotless Aircraft Research program, the presence of a large assemblage of German rocket scientists in Huntsville, Alabama, and the sudden unemployment of a Canadian fighter production team. Congress, with NACA/NASA assistance, provided leadership in devising the manned space programs and set the stage for the bold scheme to land an American on the Moon.

In the summer of 1958, as Congress deliberated space legislation, Dr. Hugh Dryden, NACA's Director, called Gilruth and Abe Silverstein, the director of the Lewis Research Center, to Washington to begin formulating a spaceflight program. Silverstein and Gilruth shuttled back and forth from their home offices, usually spending four or five days a week in Washington. For several months, Silverstein noted later, Gilruth's interests had quickly moved in the direction of "manned spaceflight."

Gilruth assembled a small group of associates and advisors, including Max Faget, Paul Purser, Charles W. Mathews, and Charles H. Zimmerman of the Langley Laboratory; Andre Meyer, Scott Simpkinson, and Merritt Preston of the Lewis Laboratory; and many others on an "as needed" basis. He brought in George Low and Warren North from Lewis and Charles Donlan from Langley to help polish the plan in the late summer. The product of these intensive sessions was much more than an organizational format for a work project; it was an engineering design for putting an American in space. As Gilruth said, "we came up with all of the basic principles of Project Mercury," including a pressurized capsule with a blunt face and a conically shaped afterbody containing a conical-shaped couch, to be launched variously by an Atlas or a Redstone, and including a special

cluster design proposed by Paul Purser and Max Faget, to be called the "Little Joe," to test an emergency escape device and a water-landing parachute system.

Congress, meanwhile, was deliberating the Eisenhower administration's legislation, introduced by Lyndon B. Johnson and Senator Styles Bridges, calling for the creation of NASA. Hearings were being conducted before the Senate Select Committee on Space and Astronautics, chaired by Johnson, and the House Select Committee on Aeronautics and Space Exploration, chaired by Congressman John W. McCormack.

In July 1958 before final approval of the NASA legislation, Gilruth, with Silverstein and

Dryden, presented the concept for manned spaceflight to Dr. James R. Killian (Scientific Advisor to the President) and the President's Scientific Advisory Board. Gilruth and Dryden subsequently appeared before the House Select Committee on Aeronautics and Space Exploration, which began hearings on August 1, and explained the manned spaceflight initiative. Concurrent with the approval of the National Aeronautics and Space Act of 1958, the House created a standing committee on science and astronautics on July 21, headed by Congressman Overton Brooks of Louisiana. Subcommittees included a committee on Scientific Training and Facilities headed by George P. Miller of California, a Subcommittee on Scientific Research and Development headed by Olin E. Teague of Texas, a Subcommittee on International Cooperation chaired by Victor L. Anfuso of New York, and a Subcommittee on Space Problems and Life Sciences under Congressman B.F. Sisk of California. President Dwight D. Eisenhower signed the National Aeronautics and Space Act on July 29. Although the act referred to "manned and unmanned" space vehicles, it by no means specified that the American or NASA "activities in space" necessarily involved placing men or women in space. Not all were convinced (nor would be as the years passed) that a space program and putting humans into space were necessarily synonymous. Nevertheless, in those first weeks following approval of the act, Silverstein and Gilruth urged Dryden to create a special task group to implement a *manned* spaceflight program.

That the American response to Sputnik should literally be to put an "American in

space" did not reflect prevailing public opinion or the conventional wisdom of the aeronautical, scientific or military communities. Even among NACA/NASA personnel, many, including senior people, believed that the projected manned spaceflight program was an overreaction at best, a stunt at worst, and necessarily temporary in either event. The "conventional wisdom" was more closely aligned to the idea that manned spaceflight was very premature and could develop only after the technology evolved from unmanned spacecraft. Moreover, many Americans still possessed some innate disaffection for things mechanical, or robotic, that had to do with the further intrusion of machines in the "garden" of American life or,

more so, into the "heavens." Flight in any dimension was something some Americans had had difficulty with since the days of the Wright brothers.

Despite their reservations and skepticism, Americans had an equally strong, but ambivalent fascination with the "machine." Space vehicles, if such were to be, clearly needed the benign control of the human hand. Although totally unrelated to the in-house NACA/NASA deliberations, a feature article by a prominent political leader in a prominent engineering journal reinforced the arguments in support of manned space vehicles.

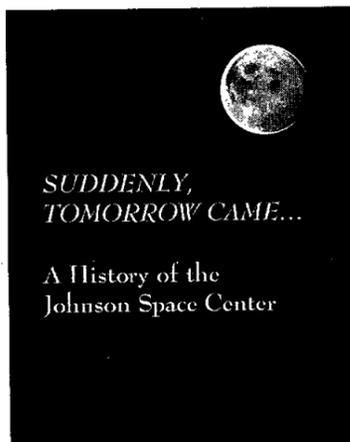
In Congress, Senator Lyndon Johnson had become an advocate of a "broader understanding" of the new Space Age. The August edition of the *American Engineer* featured an article by Lyndon Johnson, who stressed that America was "badly underestimating the Space Age." Although security had been our first concern, and properly so, Johnson suggested that the overwhelming focus on satellites and missiles missed the point. "The ultimate [purpose] of space vehicles is the transport of man through outer space near or to the Moon, some of the planets, perhaps even to other galaxies. . . . Whatever the date, manned space vehicles will be—when they come—far less of a detail, far more a pinnacle of accomplishment than we now think." The Space Age, Johnson said, will have an impact of the greatest force on how we live and work. "We are underestimating the meaning of this whole new dimension of human experience." We have entered a new frontier, he said, the first new physical frontier to be opened since the American West. Affairs now moved very quickly.

President Dwight D. Eisenhower appointed Dr. T. Keith Glennan as the first Administrator of NASA, and Dr. Hugh L. Dryden, who had headed NACA, to be Deputy Administrator. They assumed their posts on August 19. Glennan, born in Enderlin, North Dakota, in 1905, earned a degree in electrical engineering from Yale University in 1927. His first employment was in the new "sound" movie industry, before joining Electrical Products Research Company, a subsidiary of Western Electric. He became involved primarily in administration rather than research, at times heading divisions of Paramount Pictures, Metro-Goldwyn-

Mayer, and Vega Airlines. During World War II, Glennan joined the Columbia University Division of War Research and soon became director of the Navy's Underwater Sound Laboratories at New London, Connecticut. He became president of Case Institute of Technology in 1947 and elevated it into the ranks of the top engineering schools in the Nation. He served as a member of the Atomic Energy Commission between 1950 and 1952. The Space Act declared that "NACA shall cease to exist . . ." and Glennan announced its close on September 30 and the beginning of NASA on October 1. It is a time of "metamorphosis," he said, ". . . it is an indication of the changes that will occur as we develop our capacity to handle the bigger job that is ahead. . . . We have one of the most challenging assignments that has ever been given to modern man."

A few days after NASA became operational, Max Faget, Warren North, Dr. S.A. Batdorf, and Paul Purser went to Huntsville and spent an intensive two days discussing with Wernher von Braun and some 30 other engineers and military officers the participation of the Army Ballistic Missile Agency (ABMA) and Redstone in the launch of a manned capsule. On October 7, Glennan, Dryden, and Roy Johnson, Director of the Army's Advanced Research Projects Agency (ARPA), heard Gilruth's final proposal for manned spaceflight that had been approved by a joint NASA/ARPA committee, and which essentially reflected the summer work of Gilruth's task group. "Within two hours," Gilruth said, "we had approval of the plan and a 'go ahead.'" Glennan advised Gilruth to return to Langley and organize a group to manage the project—but to report directly back to Abe Silverstein in the Washington NASA office, rather than to the center director. Not only had a manned spaceflight program been authorized, but the program was to be autonomous and independent of any other NASA center, thus effectually creating the organizational nucleus of what would become the Manned Spacecraft Center or (in 1973) Lyndon B. Johnson Space Center in Houston, Texas. For all practical purposes, the Manned Spacecraft Center existed and operated at the Langley Aeronautical Laboratory for almost four years prior to its relocation in Texas. In truth, it may have been that one of the motives for the organization of an autonomous entity to deal with manned spaceflight was to preserve the integrity of the traditional research orientation of the NACA/NASA organization, and possibly even to isolate the project because it was premature or a stunt from the perspective of the mainstream (and presumably more serious) research and scientific efforts of NASA. It could also have been a simple matter of expediency. The establishment of the STG gave the program identity and some protection from agency politics and funding squabbles.

As Glennan explained to the House Committee on Science and Aeronautics in 1959, "To get going, we have had to organize with one hand, while, at the same time, . . . operate with the other." It is not an efficient way to do business, he said, but there was never time to proceed in an orderly fashion. Wesley Hjernevik, who joined the STG as its business and administrative manager, recalled that at what may have been the true moment of inception of the STG, in a meeting with Glennan following the presentation to President Dwight D. Eisenhower and his staff by Gilruth's group, the reality of the manned vehicle project struck. The meeting closed with Glennan's comment, "okay men, let's get on with it." Whereupon Gilruth's mouth "fell open;" he made inquiries about staff, money and facilities. "Glennan," Hjernevik said, "just got red in the face." He had no answers to those questions. He got mad, pounded on the table and repeated, "I said get on with it," and got up and walked out. □



Top: In September 1962, President John F. Kennedy holds a model of the Apollo Command Module, presented to him during a visit to NASA facilities in Houston. To Kennedy's left is NASA Administrator James E. Webb; to his right are Vice President Lyndon B. Johnson and Manned Spacecraft Center Director Robert R. Gilruth. Above: A herd of cattle graces the future MSC site in 1962. The MSC was renamed for Johnson in 1973.

# NASA tests noise-reducing nozzle for supersonic airliners

NASA is evaluating an advanced exhaust nozzle concept that could reduce noise made by 21st Century supersonic jet airliners to the level of today's new subsonic jets without affecting takeoff performance.

The wind tunnel tests at Ames Research Center use an experimental nozzle attached to the rear of a one-tenth scale model of a jet engine. The subscale engine simulates the exhaust of a future supersonic airliner

under takeoff conditions. Jet engine noise comes from a plane's exhaust or "plume" of turbulent air in its wake.

"This future supersonic airliner undoubtedly will have to comply with Federal Aviation Administration regulations, so we're trying to make it as quiet as future subsonic airliners," said Ames Project Manager Paul Soderman.

The nozzle is an "ejector suppressor" type designed by GE Aircraft

Engines, Cincinnati. It scoops in outside air and mixes it with the high-energy jet exhaust. That lowers the speed of the exhaust and consequently, the noise.

In the tests, engineers use a laser and an infrared video system to measure the engine's exhaust flow. They also employ a pair of microphones mounted on 15-foot struts to measure the noise. The struts move back and forth beside the nozzle to

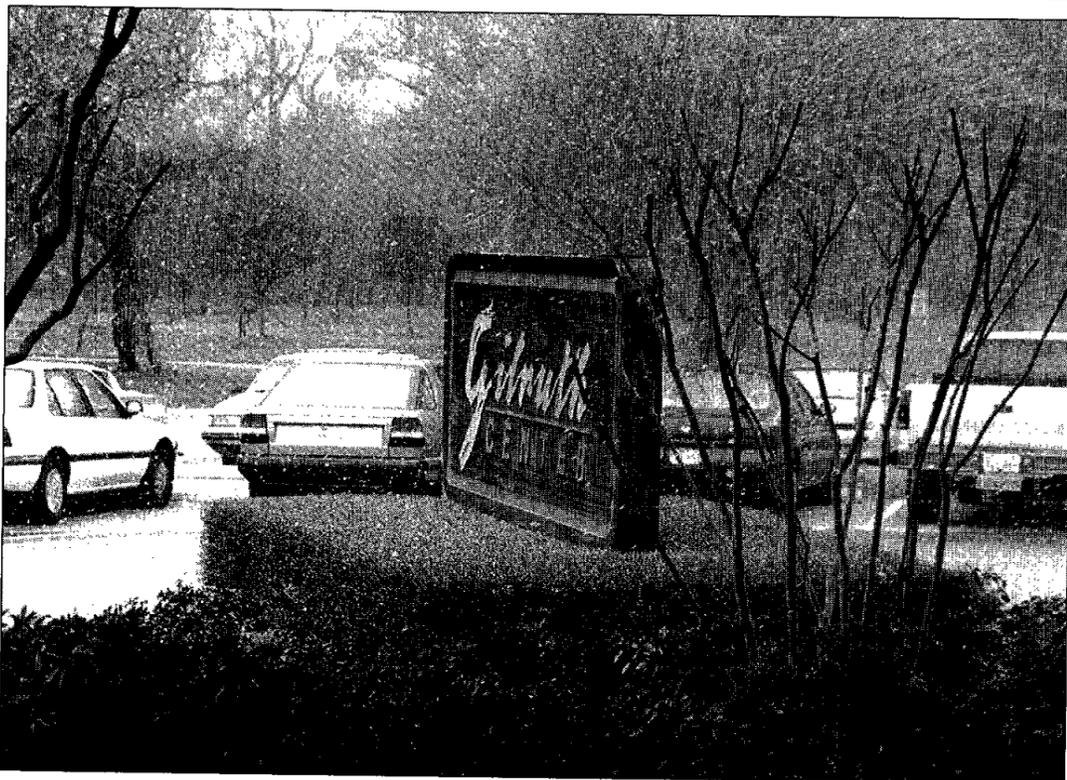
obtain data.

"We know how much noise a jet engine makes in our wind tunnel," said Soderman, an aeronautical and acoustical engineer. "We want to learn how much noise it makes with an advanced suppressor on."

"We're also testing the engine's thrust loss caused by using the ejector suppressor, because thrust loss affects a plane's takeoff performance," Soderman added. "If we can

keep the loss below 5 percent, we will be very pleased."

The nozzle tests in the 40- by 80-foot test section of Ames' National Full-Scale Aerodynamics Complex are the first in a scheduled series. They are all part of NASA's High-Speed Research Program, which is conducting research to provide technology for an environmentally compatible, economically practical next-generation supersonic transport.



JSC Photo by Jack Jacob

**BETTER LATE THAN NEVER**—JSC workers didn't get the chance to enjoy a white Christmas, but on the first day of February a flurry of flakes dropped on the center and the rest of Houston. The snowfall was the first at JSC since 1989, when several inches accumulated and the center was closed.

## Employees earn Aviation Safety Awards

By Kyle Herring

The annual Aviation Safety Awards were presented recently to seven employees by Flight Crew Operations Director David Leestma in a ceremony at Ellington Field.

Ace Beall, chief of the Aviation Safety Office, assisted in the presentations, which recognized outstanding accomplishments and continuous improvement in aviation safety.

The Mark Heath Aircraft Engineering Award was presented to Tim Ames. In addition to his regular duties of providing engineering assistance for maintaining NASA's T-38 aircraft fleet, Ames has integrated state-of-the-art hydraulic, pneumatic and electronic hardware for retrofit into these aircraft.

Astronaut Dick Richards was

awarded the Steve Thorne "Top Fox" award. As head of the Astronaut Office's Safety Branch, Richards provided inputs critical to the safety processes involving shuttle, payloads, T-38 aircraft and facility safety.

The Stuart M. Present Flight Achievement Award was presented to Jack "Triple" Nickel. As an aviation safety officer and instructor pilot for astronauts using the Shuttle Training Aircraft, Nickel led the way in establishing a formal aircraft operating area for the NASA fleet of T-38 training aircraft. He also took the lead in revising and preserving high altitude approach procedures and establishing noise abatement procedures at Ellington Field.

Donald Hanselman was present-

ed the John T. Bassham Quality Assurance Award. He led the effort to inspect the T-38 aircraft avionics upgrade parts manufactured by the center's Technical Services Division.

The Flight Simulation Engineering Award was given to David Baer, an engineer on the STA and flight scheduler for the Quality Assurance Branch.

John Bain received the James A. Korkowski Excellence in Achievement Award for leading an activity to document the STA flight software in data flow diagram form to ease the conversion of the software to Ada.

The Aircraft Maintenance Award was presented to Jose Rangel for his work as principal interface between NASA and the Air Force in obtaining aircraft parts.

## Huntoon creates technology transfer office

(Continued from Page 1)

Harold S. Stall will resume his role as director of public affairs, returning from his assignment as the primary JSC interface with Space Center Houston. Stall will continue to serve as president of the Manned Space Flight Education Foundation Inc., which oper-

ates Space Center Houston.

Douglas K. Ward will continue as deputy director of that organization and assume responsibility for support of the Space Station Program Office. In this role, he will be principal spokesperson for the Space Station Program and serve as a focal point to assure that JSC

Public Affairs Office resources are provided to the station and shuttle programs.

Huntoon also announced the formation of a small office on her staff to focus JSC efforts in technology transfer and commercialization. Henry Davis, formerly of Corning Inc., will head the office.

## Contract consolidation 'major milestone'

(Continued from Page 1)

Boeing," said Larry Winslow, Boeing vice president for the Space Station Program. "We are excited to lead the team to design, build and launch a superb orbiting laboratory."

Four-party agreements also were signed that will officially close off the three work package contracts with the Boeing Defense and Space Group (Work Package 1), McDonnell Douglas Corporation (Work Package 2) and the Rocketdyne Division of Rockwell International (Work Package 4). The agreements, known as novation, mark the end of the work package structure that existed under the Freedom program.

The work formerly performed by

the three work package contractors will continue with McDonnell Douglas and Rocketdyne now being subcontractors to Boeing. McDonnell Douglas and Rocketdyne will continue to be responsible for their specific hardware development efforts and for supporting Boeing in sustaining engineering activities.

Overall, the agreements signal the end of the transition from the Freedom program to the redesigned space station program.

The international space station will be a multi-functional orbiting laboratory used for scientific and technology research in the unique microgravity environment of space. The effort pulls together capabili-

ties and resources from the European Space Agency; NASA, the Japanese Space Agency; the Canadian Space Agency; and, most recently, the Russian Space Agency.

On-orbit construction of the facility will begin in 1997 and will use the launch capabilities of both the United States and Russia. A U.S. laboratory module will be operational after the fourth U.S. assembly flight. U.S. launches will continue to add Japanese and European laboratory modules, a Canadian-built robotic arm and a habitation module. Russia will fly a "space tug," a science module, a power platform and a number of research modules.

## Total Health Program activities to pump up American heart month

By Eileen Hawley

February is American Heart Month and JSC's Total Health Program plans several activities to promote good cardiovascular health.

The JSC Clinic is offering free blood cholesterol screenings for all JSC employees and on-site contractors from 7:30-9:30 a.m. Feb. 14 in Bldg. 8. Individuals should fast for 12 hours prior to the test and results will be mailed within a few days. In addition to the cholesterol screening blood pressure screening is ongoing at the clinic.

Lynn Hogan, chief nurse at the clinic, stresses that employees can go to the clinic every year, even if they are not scheduled for a

physical exam, to have a cholesterol evaluation and their height and weight charted.

Another event that will highlight the importance of physical activity in warding off heart disease is a bicycle clinic set for Feb. 24 at the Gilruth Center. The seminar begins at 4:30 p.m. in Room 204 and features Harry Tidwell of Westside Schwinn talking about proper safety and maintenance of bicycles.

Cardiovascular disease remains the number one cause of death in America, killing more than 1 million people every year. Several factors contribute to the likelihood of suffering from heart disease. Some, including age, gender and heredity, are not under our control but risk factors such as smoking, stress, physical inactivity and high blood pressure or cholesterol levels can be addressed by modifying behavior.

The Total Health Program and the JSC Clinic maintain several pro-

grams to help employees achieve and maintain cardiovascular health. "There are several characteristics that separate people who have heart attacks from people who don't," said Larry Wier, director of the Health Related Fitness Program. "Of all the deaths in the United States, not just cardiovascular deaths, about two-thirds of them are traced to fat — fat on your body or fat in your diet."

"The number one priority tactic in promoting health and reducing medical cost is physical exercise," Wier added.

The fitness program emphasizes education, physical activity and nutrition to help participants achieve and maintain cardiovascular

health. Realizing that not everyone enjoys the idea of exercise, a new weight control program is being developed by Wier. "We're just now building this program which will emphasize education, information seminars and support groups to help participants improve their health-risk profile."

The programs also stress the importance of making intelligent lifestyle choices. Registered dietitian Cindy Yuan leads a six-week nutrition intervention program designed to teach participants how to make intelligent food choices and modify dietary habits. A cholesterol evaluation is conducted before the course, six weeks following the course and again one year later to gauge its effectiveness.

For additional information on the total health programs, contact Larry Wier at ext. 30301. For more information on the bicycle clinic, contact Greta Ayers at x30302.

## Cajun cookin' to spice up Mardi Gras dinner at Gilruth

Celebrate Mardi Gras with friends, food and music at the Feb. 26 dinner dance slated for the Gilruth Center.

The JSC Employee Activities Association is hosting the event which includes music by Probable Cause, a cajun chicken dinner and dancing until midnight. Social hour begins at 7 p.m. followed by dinner at 8 p.m. There will be dancing and music in the ballroom from 9 p.m.-midnight.

Celebrants are invited to wear

costumes and enjoy the talents of the three face painters in attendance. Tickets for the Mardi Gras celebration go on sale in the Bldg. 11 Exchange Store beginning 8 a.m. Feb. 9 through 2 p.m. Feb. 23. Ticket cost is \$15 per person and tickets are non-refundable.

JSC employees, NASA-badged contractors and NASA retirees may purchase one table of either 6, 8 or 12 seats. For additional information, contact Mavis Lancen at x49644.

## Space News Roundup

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## Discovery crew to eject spheres for radar tracking

(Continued from Page 1)

Radar Calibration Spheres and the University of Bremen Satellite. ODERACS, a project of JSC's Solar System Exploration Division, is designed to help calibrate ground-based instruments that track orbiting litter. BREMSAT will map atomic oxygen, look into the distribution of micrometeorites and dust in low-Earth orbit and measure pressure and temperature during re-entry.

The final full flight day will concentrate on stowing experiments and crew equipment and preparing Discovery for landing on the ninth day at Kennedy Space Center.